

The principal varieties are:

*Hyaline cartilage* which has few cells and much intercellular substance. (Fig. 4.)

*White fibro-cartilage* which contains many white fibers, giving to it additional strength.

*Yellow or elastic fibro-cartilage* which contains elastic fibers giving additional elasticity.

Note.—Most bones are formed in cartilage. (See Ossification, page 14.)

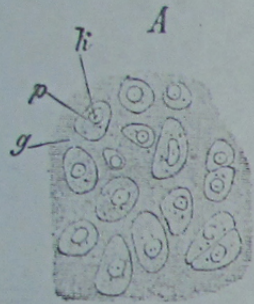


FIG. 4.—HYALINE CARTILAGE.—(Stöhr.)

**Epithelial tissue** forms the surface layers of the body both within and without. It is composed of layers of cells resting upon a base of the simplest possible substance, which holds the cells together and which bears vessels and nerves for their use. The form of epithelial cells varies with their location and use or function. (Fig. 5.)

The *epithelium of the exterior* of the body is formed by flattened cells, arranged in few or many layers according to the degree of friction or pressure to which the skin of the part may be exposed. The covering thus formed varies therefore in thickness, from that of the delicate covering of the lips to the tough sole of the foot.

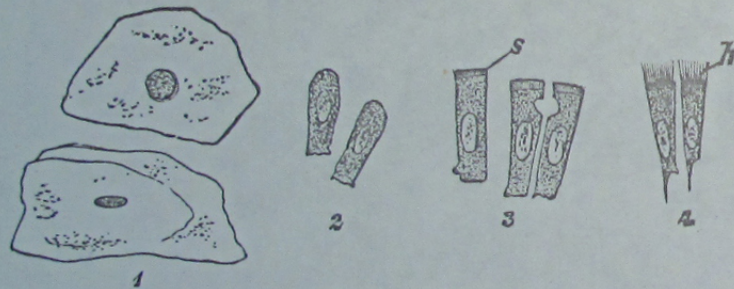


FIG. 5.—EPITHELIAL CELLS OF RABBIT, ISOLATED.  $\times 560$ . 1. Squamous cells (mucous membrane of mouth). 2. Columnar cells (corneal epithelium). 3. Columnar cells with cuticular border *s* (intestinal epithelium). 4. Ciliated cells; *h*, cilia (bronchial epithelium).—(Lewis and Stöhr.)

The *epithelium of interior surfaces* is quite different. Its cells may be flattened, spherical, cuboid or columnar in shape and it is always moist. (All body surfaces are *epithelial* surfaces.)

In the lining of the air passages the epithelial cells are *ciliated*, that is, they bear tiny hair-like projections of their substance called *cilia*, which are in constant waving motion, always in the same direction, sometimes slow, sometimes rapid. (See p. 235.)

In the *digestive organs* the *epithelial layer* plays an important part in the formation of digestive fluids, and also in the absorption of digested food.

In the lining of *closed cavities* it assists in the formation of the fluids which they contain (example, the *pleura*).

Included under this heading are (with brief notes of functions):

*Gland tissue*, where a layer of cells has the power to form a special substance from the blood. (*Adenoid tissue* resembles gland tissue.) (See p. 8.)

*Mucous membranes*, which line all interior surfaces to which air has access. Their special cells produce a clear thick fluid called *mucus* which keeps the surfaces moist.

*Serous membranes*, which line the closed cavities of the body. They are themselves closed sacs containing a clear thin fluid called *serum* which prevents the surfaces from rubbing together.

*Synovial membranes*, which line the interior of movable joints; they contain a thick fluid called *synovia* which like serum prevents friction.

The epithelial lining of the heart and blood-vessels, serous membranes, and lymph vessels, is called *endothelium*.

**Clinical notes.**—Mucous membranes are well supplied with blood-vessels and bleed freely when wounded, as seen in operations upon the nose and throat.

An accumulation of serum in the large serous membrane of the abdomen causes the condition called *ascites* (a variety of dropsy).

The processes of secretion and excretion are carried on through epithelial cells. (In specialized epithelial tissues.)

**Secretion** is the process of separating substances from the blood (generally in fluid form). Such substances if useful to the body are called *secretions*; if they are waste matters to be thrown off or eliminated, they are called *excretions*.

*Secreting organs*—mucous and serous membranes, all glands.

*Excreting organs*—lungs, kidneys, liver, cutaneous glands.

To summarize the functions of epithelial tissues—they are *protective, secretory, excretory, absorptive*.

An **organic substance** is a substance formed by living cells, whether they are single or arranged together in organs. Organic substances disappear in burning. *Inorganic substances* are mineral.



An organ is any part of the body designed for a special function or use; it may be composed of several kinds of tissue. An organ in the interior of the body (internal organ) is called a *viscus* (plural, *viscera*). Examples, *heart, lungs*.

A system is composed of a number of organs of similar structure. Examples, the *muscular system*, the *nervous system*.

An apparatus is composed of a number of organs of like or different structures, so arranged and associated that their action together will serve a special purpose. Example, the *digestive apparatus*.

**Metabolism.**—This term is used to express in one word the related processes of *building up* and *breaking down* which are constantly going on in all living cells.

The cell appropriates materials and combines them to perfect itself; in the exercise of its function it uses up some portion of its substance and so must be again built up, to be again pulled apart—in endless repetition.

Cell action in some tissues results principally in liberating *heat* and in *body movement*, as in muscles. In others it forms new compounds for other cells to use—for example, the liver cells form *glycogen*; the gastric glands secrete *gastric juice*, etc. Again, certain cells combine waste matters to get them into shape for other organs to excrete, for example, the formation of *urea* in the liver. In this way food materials are used for different purposes and worked over in different tissues until waste alone remains.

These examples (and many more which might be given) illustrate the *metabolism* which is constantly taking place in the body, and which will often be referred to in the text. (See pp. 166, 271.)

**Structure of Glands:** Since gland tissue is so important a factor of vital processes, a further description is warranted. It has already been stated that the *epithelial layer* is the active agent in the formation of new substances out of material derived from the blood. For the performance of this function, the epithelium is disposed in organs called *glands*.

The simplest gland is either a small *tube*, or a *sac*. The tubular gland may be divided into two or more portions forming a compound tubular gland. *Tubular glands* exist in the stomach, intestines, skin, etc.; in the skin they are coiled or convoluted at the extremity. (See Fig. 166.) A modification of the *saccular* gland is one which is composed of many small sacs arranged like

a bunch of grapes upon their stem—*racemose* gland. The salivary and pancreatic glands resemble this form.

The secretion of a true gland is discharged through a *duct* which opens upon some surface, either of the exterior or the interior of the body—for instance, the sweat glands open upon the skin, the gastric glands open upon the interior surface of the stomach, etc. All secretions which are discharged through ducts of glands are called *external secretions*. (For internal secretions see page 263.)

**Lymphoid tissues** are so called because they contain lymph cells supported in a network of *retiform tissue*. The *faucial* or

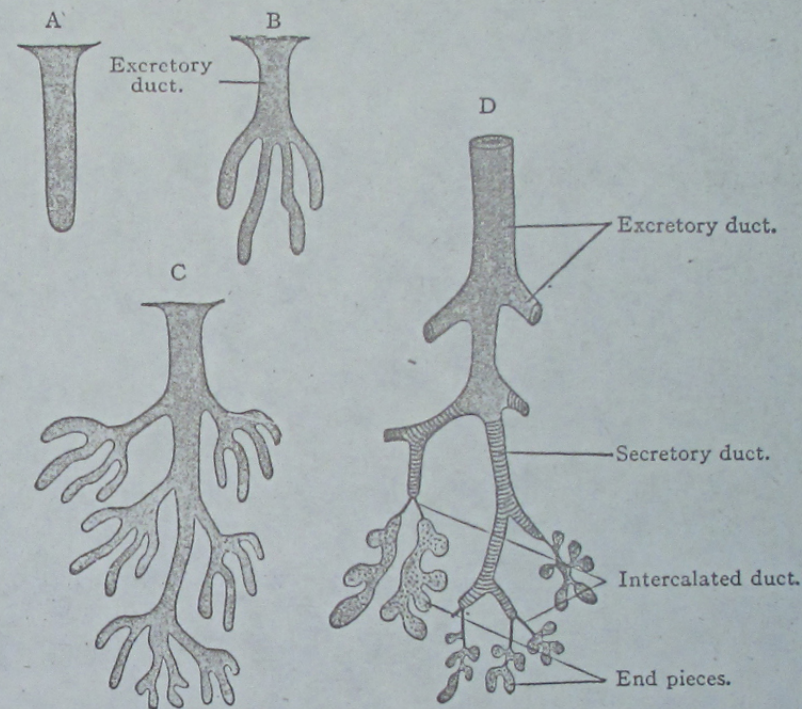


FIG. 6—DIAGRAM OF VARIOUS FORMS OF GLANDS.—(Lewis and Stöhr.)  
The arrangement of ducts in D is that of the human submaxillary gland.

*palatine tonsils* are lymphoid in structure (page 133), as are also the *lingual* and the *naso-pharyngeal tonsils* (page 135). (*Adenoids* are hypertrophied naso-pharyngeal tonsils.)

*Blood* and *lymph*, although quite different in composition from others, still conform to the definition of a tissue and are called **fluid tissues**. They are each composed of an assemblage of small *cells* supported by *intercellular substance*; in this case, the intercellular substance is fluid instead of solid or semi-solid. In blood,



the cells are *blood corpuscles*; in lymph, they are *lymph corpuscles*. The intercellular substances are *blood plasma* and *lymph plasma*. (Other fluids contain chemical substances only, in solution; cells appear in them incidentally.)

These tissues will be described more at length in Chapters X and XIII.

## CHAPTER I

### BONE TISSUE AND BONE CLASSIFICATION ARTICULATIONS

Bone tissue is conspicuously a hard tissue. This hardness is due to the mineral or *inorganic* substances which it contains. They are mostly *phosphate* and *carbonate of lime* and form two-thirds of the weight of an adult bone. The remaining one-third is composed of *organic* or animal substances, consisting of *vessels*, *marrow*, *bone corpuscles*, and *gelatinous matter*.

The *mineral* portion alone may be seen in a bone which has been burned (thus destroying the organic substances). This leaves the bone still hard, but very brittle and easily crushed. The pale grayish color of a burned bone is noticeable, the result of the loss of all the marrow and blood which it contained before, and which gave it a pinkish tinge.

The *organic* portion of a bone may be shown by immersing it in dilute hydrochloric acid for a few days. The mineral salts will be thus dissolved out, leaving the flexible and elastic organic portion which still retains the shape of the bone. A long bone after the lime salts are removed in this way is said to be *decalcified*, and may be bent and twisted, or even tied in a knot.

By these experiments it is seen that the mineral matter gives hardness to a bone, while the animal matter gives flexibility and elasticity. The proportions of the two kinds of substance vary at different ages. The bones of a child are soft because they have not

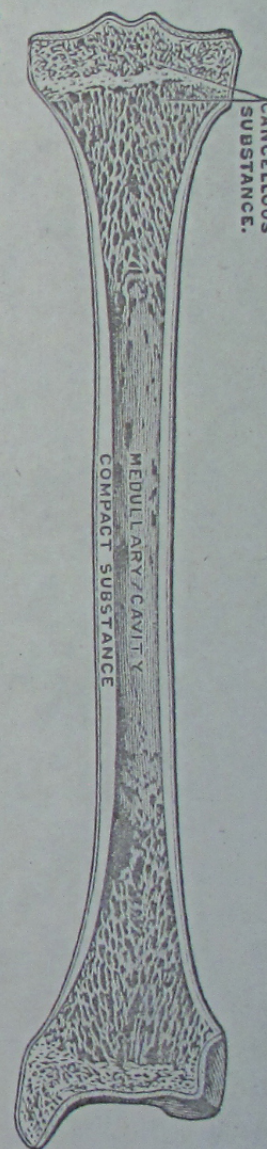


FIG. 7.—VERTICAL SECTION OF A LONG BONE.—(Testut.)



## GLOSSARY

---

- Abdomen.** From a word meaning *to conceal*. The abdomen contains or *conceals* the abdominal organs.
- Abduction.** From a Latin word meaning *to lead from*. The *abducens* muscle leads, or turns, the eye from the median line.
- Acetabulum.** A small vessel or cup for vinegar. The name given to the round depression or cavity of the hip bone or *os coxæ*, for the head of the femur.
- Acid.** Sour. Acids redden blue litmus paper.
- Accommodation.** The adjusting or focussing of the eye for vision at different distances.
- Acromegaly.** A disease characterized by over-growth of the face and extremities.
- Acromion.** From Greek words meaning *summit* and *shoulder*. The process of bone at the highest point of the shoulder.
- Adduction.** Leading toward.
- Adenoid.** Resembling a gland or *aden*. A gland-like growth in the naso-pharynx.
- Adipose.** Fatty. Fat.
- Afferent.** Bearing toward. Afferent vessels enter organs.
- Ala.** A wing. (Plural, *alæ*).
- Alimentary.** Pertaining to food or *aliment*, as, the *alimentary tract*, which contains the food until it is digested.
- Alkaline.** Opposite of *acid*. An alkali turns red litmus paper blue.
- Alveolus.** The border of the jaw bone, named for the cavities which contain the teeth. (*Alveolus*, a little hollow.)
- Ameba.** A one-celled, jelly-like living being, which constantly changes its form.
- Ameboid movements.** Movements which cause a change of form, like those of the *ameba*.
- Amphoteric.** Like both. Applied to fluids which possess certain qualities resembling both alkalies and acids.
- Amyloid.** Starchy or starch like.
- Amylopsin.** The starch-digesting ferment of pancreatic fluid.
- Anastomosis.** The opening of one vessel into another. Literally—*to bring to a mouth*.
- Ancon.** The elbow. *Anconeus*, a muscle of the elbow-joint.
- Annulus.** A little ring. (*Annulus ovalis*, the oval little ring of the heart.)
- Anonyma.** Without a name.
- Antebrachium.** The forearm. From *ante*, before, and *brachium*, the arm.
- Antecubital.** Applied to the space in front of the elbow. From *ante*, before, and *cubit*, the forearm.
- Antrum.** A cave. The hollow in the maxilla is called the *Antrum of Highmore*.
- Aorta.** The largest artery in the body.
- Apnea.** Suspension of breathing.
- Aponeurosis.** A layer of strong white fibrous tissue (meaning *form a tendon*).
- Aqueous.** Watery, from *aqua*, water.
- Arachnoid.** Like a spider's web, for fineness. One of the membranes of the brain and spinal cord.
- Areolar.** Having little spaces.
- Arterio-sclerosis.** Hardening of the arteries.
- Artery.** A vessel carrying blood away from the heart.
- Arthrosis.** A joint or *articulation*.
- Arytenoid.** Shaped like the mouth of a pitcher.
- Assimilation.** The taking up of nutriment by the body tissues, in such a manner that it becomes a part of them.
- Asphyxia.** A condition in which the blood is deprived of oxygen.



**Atlas.** A fabled giant who bore the globe upon his shoulders. The first cervical vertebra, upon which the skull rests.

**Atrium.** A hall, a chamber of the heart where blood enters.

**Atrophy.** Wasting. From a Greek word signifying *want of nourishment*.

**Auricular.** Shaped like, or belonging to, an ear or *auricle*.

**Axis.** The second cervical vertebra. Named because of the pivot around which the atlas revolves (like a wheel around an axis).

**Axone.** An axis. The essential part of a nerve fiber.

**Azygos.** Without a yoke. The name of certain vessels which are not in pairs.

**Biceps.** Having two heads, as the *biceps femoris*; *biceps brachii*.

**Bicuspid.** Having two points or cusps. A *bicuspid* tooth.

**Bone corpuscle.** A formative cell of bone tissue.

**Brachialis.** Belonging to the arm, or *brachium*.

**Bronchus.** An air tube. (Plural, *bronchi*.) The smallest air tubes are called *bronchioles*.

**Buccinator.** From a word meaning *trumpet*. The blowing or trumpeting muscle.

**Bursa.** Literally, a purse. The *bursæ* are small sacs containing fluid and found in the fascia under skin, or muscles, or tendons.

**Calcaneus.** The heel bone. The *tendo calcaneus*, or tendo Achillis, is attached to the *calcaneus*.

**Calculus.** A stone-like body formed in some fluid of the body. *Renal calculus*, in the kidney; *biliary c.*, in the gall-bladder, etc.

**Callus.** A thickened portion of the skin. The material thrown out (*provisional callus*) for the repair of fractured bone, to become the *permanent callus* when the bone is completely ossified.

**Cancellous.** Resembling lattice work. A *cancellous* or spongy bone.

**Canine.** Resembling a dog. *Canine teeth*, like a dog's teeth.

**Canthus.** The angle at the meeting of upper and lower eyelid; plural *canthi*.

**Capillary.** Resembling a hair in size. (*Capillus*, a hair.)

**Capitellum, or capitulum.** A little head, an eminence on the lower extremity of the humerus.

**Capsule.** A structure which encloses an organ or part. (The *capsule* of a joint.)

**Carbo-hydrate.** A substance composed of carbon and water; sugars and starches.

**Cardiac.** Belonging to the heart or *cardia*.

**Caries.** Decay of bone. *Carious*, decaying.

**Carotid.** The name of the large arteries of the neck, once thought to cause sleep. From a Greek word meaning *to produce sleep*.

**Caruncle.** A small soft projecting tumor. *Urethral caruncle*, a minute tumor of the urethral mucous membrane, made up mostly of nerves and vessels.

**Casein.** The proteid or cheesy part of milk.

**Cast.** An albuminous structure moulded in tubular form.

**Cauda equina.** A horse-tail. The name given to the bundle of spinal nerves in the lower portion of the spinal canal.

**Cecum.** Blind. The blind pouch at beginning of the large intestine.

**Celiac (cæliac).** Pertaining to the *celia* or belly.

**Center.** In the nerve system, a *center* is a collection of gray cells. The *central nerve system* comprises the brain and spinal cord, which contain the large nerve centers. *Central convolutions* contain a majority of motor centers.

**Centrifugal.** Referring to a force which is exerted from the center outward; a *centrifugal* nerve conducts impulses from a center.

**Centripetal.** Applied to a force which seeks a center; a *centripetal* nerve conducts impulses to a center.

**Cerebellum.** Little brain.

**Cerumen.** The wax of the ear. (*Cera*, wax.)

**Cervix.** Neck. *Cervical*, belonging to or resembling a neck.

**Choana.** A funnel. The *choanæ* are the posterior openings from the nose into the pharynx.

**Choroid.** Like the *chorion*, which is a fetal membrane bearing blood-vessels.

**Cicatrix.** A scar. It is formed of fibrous connective tissue.

**Cilia.** Eyelashes. *Ciliated*, having tiny hair-like projections, as *ciliated epithelium*.

**Ciliary.** The *ciliary region* of the eye presents radiating lines, caused by folds of the tissues composing it (*ciliary processes*).

**Circumduction.** Leading around. This is the motion made when a part is moved around in a circle, one end being stationary. The extremities, the digits and the head, may be circumducted.

**Circumflex.** To bend around. *Circumflex* arteries wind around the arm or thigh.

**Circumvallate.** Walled around. The circumvallate papillæ at the base of the tongue are encircled by a ridge.

**Clavicle.** The *clavicula*, which resembles a very ancient key.

**Climacteric.** Literally, *the round of a ladder*. Any time of life when the system is believed to undergo marked and permanent changes; usually applied to the time of the cessation of menstruation.

**Coagulation.** From *coagulare*, to curdle. The clotting of blood. *Coagulum*, a blood clot.

**Coccyx.** A cuckoo's beak. The bone at the end of the spinal column, named from its shape.

**Cochlea.** A conch-shell. A cavity of the internal ear resembling a snail-shell in form.

**Collateral.** From words meaning *side* and *together*. *Collateral circulation* is secured by the union of branches of two vessels, whereby the main current of fluid may be carried by this side route if necessary.

**Colliquative.** Literally—a *melting together*. Colliquative stools are profuse and watery.

**Commissure.** A placing together. A commissure connects two parts of an organ, as the *commissures* of the brain.

**Communis.** Common. Applied to a muscle whose tendons are common to several organs.

**Concha.** A shell.

**Condyle.** A knuckle. A rounded eminence of bone.

**Conjunctiva.** Connecting. The mucous membrane which connects the under surfaces of the eyelids.

**Conoid.** Shaped like a cone.

**Convolute.** Twisted.

**Co-ordinate.** From words meaning *together*, and *to order or regulate*. *Co-ordination* is the systematic acting together of several parts.

**Coracoid.** Like a crow's beak. The *coracoid* process of the scapula.

**Corium.** Leather. The deep portion of the skin from which leather is made.

**Cornea.** Horny. The tough transparent membrane in the anterior of the eyeball.

**Cornua.** Plural of *cornu*, a horn.

**Coronal or coronoid.** Pertaining to, or resembling a crown.

**Coronary.** The *coronary* arteries encircle the base of the heart.

**Corpus callosum.** The transverse commissure of the cerebral hemispheres.

**Corpuscle.** A little body. A blood cell. *Malpighian corpuscle*, a structure in the kidney. *Lymph corpuscle*, a cell formed in a lymph gland.

**Corpus luteum.** Yellow body. The substance formed in a ruptured Graafian follicle of the ovary.

**Cortex.** Bark. The superficial layer, as the *cortex* of the brain.

**Costal.** Relating to a rib or *costa*.

**Coxæ.** Plural of *coxa*, the hip; also the genitive form, as *os coxæ*, the bone of the hip.

**Cranium.** The part of the skull which contains the brain.

**Crest.** A ridge of bone, either on a surface or at the border.

**Cretinism.** The condition of a *cretin* or undeveloped person, both mentally and physically.

**Cribriform.** Resembling a sieve.

**Cricoid.** Like a ring. The *cricoid cartilage* of the larynx is shaped like a seal ring.

**Crucial.** Like a cross. The *crucial ligaments* cross each other.

**Crural.** Belonging to or like the lower extremity, from *crus*, a leg; as the *crural nerve*, the *crura* (or legs) of the diaphragm.

**Cystic.** Relating to a *cyst*, or a sac containing fluid (*cystic duct*). A *cystic ovary* has cysts developed from its substance.

**Deglutition.** The act of swallowing.

**Deltoid.** Shaped like the Greek letter *delta*, Δ.

**Dental.** From *dens*, a tooth, belonging to a tooth.

**Dentated.** Having points which resemble teeth.

**Dentition.** The eruption or "cutting" of the teeth.



- Diapedesis.** *A jumping through.* The passing of blood cells through the walls of capillaries.
- Diaphoretic.** A remedy which increases the amount of perspiration.
- Diaphragm.** A wall across a space. The muscle which separates the cavity of the thorax from that of the abdomen.
- Diaphysis.** The greater part of the shaft of a bone.
- Diarthrosis.** A movable joint.
- Diastole.** A Greek word meaning *a drawing apart*. The dilation of the chambers of the heart.
- Digastric.** Double bellied as the digastric muscle.
- Digit.** A finger or toe.
- Distal.** Farthest from the head or trunk.
- Diuretic.** A remedy which increases the quantity of urine.
- Dorsal.** Belonging to the *dorsum*, or back.
- Duodenum.** Meaning twelve. The duodenum is twelve finger-widths long.
- Dura mater.** *Hard mother.* The fibrous outer membrane of the brain and spinal cord.
- Dyspnea.** Difficult breathing.
- Edema.** Swelling caused by effusion of serous fluid into areolar tissues.
- Efferent.** Bearing from. Efferent vessels leave organs.
- Effusion.** An abnormal pouring out (or secreting) and collection of fluid in the body.
- Element.** A substance which cannot be divided into simpler substances.
- Eliminate.** From words meaning *without the threshold*. To excrete substances which are useless.
- Embryo.** The ovum and structures belonging to it constitute the *embryo*, until the fourth month of intrauterine life.
- Endo-.** Within. *Endocardium*, within the heart. *Endothelium*, the epithelium of the interior of circulatory organs.
- Endomysium.** The sheath of a muscle-fiber.
- Endosteum.** The lining of medullary canals in long bones.
- Ensiform.** Sword-shaped. The appendix of the sternum.
- Enteric.** Pertaining to the *enteron* or intestine, as *enteric* or *typhoid fever*.
- Enzyme.** Any ferment in a digestive fluid.
- Epi.** Upon, as *epi-condyle*, *epidermis*, *epiglottis*.
- Epimysium.** The connective-tissue muscle sheath.
- Epiphysis.** A part of a bone which is formed independently, and joined later to complete the whole bone.
- Epithelial.** Pertaining to epithelium.
- Epithelium.** The uppermost or superficial layer of cells of a body surface.
- Erythrocyte.** A red cell of the blood. A red corpuscle.
- Esophagus.** From a Greek word meaning *to carry food*. The *esophagus* transmits food from pharynx to stomach.
- Ethmoid.** Sieve-like. The *ethmoid bone* has many openings on its surface.
- Eversion.** Turning outward. To *evert* an eyelid is to fold it back so as to expose the interior surface.
- Excretion.** A waste substance to be removed from the body. The process of removing waste from the tissues.
- Extension.** Stretching out or extending. (Bending backward is over-extension.)
- Exudate.** A collection of material which has filtered through the walls of vessels into surrounding tissues.
- Falciform.** Sickle-shaped.
- Falx.** A sickle.
- Fascia.** A band; plural, *fasciæ*. The tissue which binds organs or parts of organs together.
- Fauces.** From the Latin word *faux*, the throat. *Isthmus of*, the space bounded by the soft-palate, tonsils and tongue. *Pillars of*, the folds connecting the soft palate with the tongue and pharynx. (The tonsil is between the pillars of either side.)
- Femoral.** Belonging to the *femur* or thigh bone.
- Fetus.** After the fourth month, the embryo becomes the *fetus*.
- Fibrin.** A proteid substance of the blood which causes coagulation.
- Filiform.** Thread-like in shape, slender; as *filiform papillæ* of the tongue.
- Fimbria.** A fringe; *fimbriated*, having a fringe-like appearance.

- Fissure.** A cleft or groove, as a *fissure* of the brain surface.
- Fistula.** A pipe. A tube-like passage caused by disease.
- Flava.** Plural of *flavus*, yellow. Applied to elastic ligaments which contain yellow elastic tissue.
- Flexion.** Bending. *Flexure*, a bend.
- Follicle.** A very small sac (or bag) containing a secretion.
- Fontanelle.** A *little spring*. A membranous spot in the infant's skull; the name suggested by the rising and falling caused by the child's respirations.
- Foramen.** A hole. Plural, *foramina*.
- Fossa.** A depression or concavity.
- Fourchette.** A little fork.
- Fovea.** A small pit. The *fovea centralis* is a tiny depression in the macula lutea of the retina.
- Frenum.** A curb or bridle. The *frenum linguae* is the fold of mucous membrane attaching the tongue to the floor of the mouth.
- Fundus.** The base.
- Fungiform.** Shaped like a fungus or mushroom.
- Fusiform.** Spindle-shaped.
- Ganglion.** A knot. (Plural, *ganglia*.) A collection of nerve cells.
- Gaster.** The stomach. *Gastric*, belonging to the stomach or *gaster*.
- Gastrocnemius.** The *belly of the leg*. The prominent muscle of the calf of the leg.
- Genioglossus.** Belonging to the chin and tongue.
- Genu.** A knee.
- Glabella.** A little smooth space. The smooth space between the eyebrows.
- Gladiolus.** A little sword. The body of the sternum.
- Gland.** A collection of cells which can form a secretion or an excretion.
- Glans.** The head of the clitoris or penis.
- Glenoid.** Having the form of a shallow cavity. Belonging to a cavity.
- Glossopharyngeal.** Belonging to the tongue and pharynx.
- Glottis.** The upper opening of the larynx. *Epiglottis*, the leaf-shaped cartilage upon the upper border of the larynx.
- Glucose.** Grape sugar. Dextrose.
- Gluteus.** Belonging to the *gluteus* or buttock.
- Glycogen.** A white substance formed principally in the liver. Sometimes called *animal starch*.
- Gustatory.** Associated with the sense of taste.
- Gyre.** From *gyrus*, a circle. A convolution (referring to the convolutions of the brain).
- Haversian.** Name applied to the tiny canals in bone tissue, from the English anatomist Havers.
- Hepatic.** Belonging to the liver or *hepar*.
- Hemoglobin.** The oxygen-carrying substance of red blood cells, to which their color is due.
- Hemolysis.** Destruction of red blood cells.
- Hemorrhoidal.** From a word meaning *flowing with blood*. Pertaining to a *hemorrhoid* or pile.
- Hilum.** Literally, a *little thing*. Applied to the depression where vessels enter and leave an organ.
- Hormones.** Chemical substances (character unknown), formed (probably) in ductless glands, and conveyed by the blood to other organs, to influence their activity.
- Hyaline.** Resembling glass. *Hyaloid* has a similar meaning.
- Hydration.** Saturating with water.
- Hydrocephalus.** A collection of fluid either within the ventricles or outside of the brain.
- Hyoid.** U-shaped, as the *hyoid bone*.
- Hypertrophy.** Over-growth. Derived from two Greek words meaning *too much nourishment*.
- Hypochondrium.** Under the cartilage. The *hypochondriac region* is under the cartilages of ribs. (*Hypo-* under.)
- Hypodermoclysis.** Injection of fluid under the skin—in quantity.
- Hypogastric.** Under the stomach.
- Hypoglossal.** Under the tongue.



- Hypothenar.** Under the palm or sole. The eminence on the medial side of the palm or the sole.
- Ileum.** A roll or twist; the portion of small intestine which appears rolled or convoluted.
- Ilium.** The upper portion of the hip-bone or *os coxae*.
- Incisor.** A cutting instrument. The front teeth are *incisors*.
- Index.** Indicator. The first finger named from its common use.
- Induration.** Hardening of the tissues.
- Infra.** Beneath.
- Infundibulum.** A funnel-shaped space or part.
- Inhibition.** The restraining or stopping of normal action.
- Inguinal.** Belonging to or near to the thigh or *inguen*.
- Inlet.** The superior opening or *brim* or *strait* of the pelvis.
- Innominatum.** Unnamed.
- Inorganic.** A term applied to certain substances, mostly mineral, found in all organs but not produced by them.
- Instep.** The bend of the foot, dorsal aspect.
- Inter.** Between, as *intercostal*, between ribs; *intercellular*, between cells, etc.
- Inversion.** A turning in, as *inversion* of the eyelashes; *inversion* of the foot.
- Invertin.** The ferment of intestinal juice.
- Involution.** The changing back to a former condition, of an organ which has fulfilled a function, as the *involution* of the *uterus* after parturition.
- Iris.** A circle or halo of colors. The colored circle behind the cornea of the eye.
- Ischium.** The lowest part of the hip-bone or *os coxae*.
- Jejunum.** Empty. The third portion of the small intestine, usually found empty.
- Jugular.** Belonging to the neck or *jugulum*.
- Kidney or ren** (plural, *renes*). An important organ of elimination or excretion, in which the urine is formed.
- Labium.** A lip. (Plural, *labia*).
- Lacrimal.** Having to do with tears or *lacrymæ*, as the *lacrimal* gland.
- Lacteal.** Like milk (from *lac*, milk). The *lacteals* are lymph-vessels which carry the milky-looking chyle.
- Lactose.** Milk sugar.
- Lambdoid.** Resembling the Greek letter lambda,  $\lambda$ .
- Lamella.** A little plate, or thin layer.
- Lamina.** A plate or layer.
- Larynx.** The part of the air-passage extending from the base of the tongue to the trachea.
- Latissimus.** Broadest. *Latissimus dorsi*, broadest of the back.
- Lens.** A glass or crystal curved and shaped to change the direction of (or refract) rays of light.
- Lentiform.** Shaped like a lens.
- Leptomeningitis.** Inflammation of the thin membranes of the brain—the arachnoid and pia mater.
- Lesion.** The effect of an injury, or of disease, in a tissue.
- Leucocyte.** A white cell of the blood or lymph. *Leucocytosis*, an increase in the number of leucocytes.
- Levator.** A lifter. *Levator palpebræ*, lifter of the eyelid.
- Linea.** A line.
- Linea alba.** A white line.
- Linea aspera.** A rough line.
- Lingual.** Belonging to the tongue or *lingua*.
- Lobule.** A little lobe.
- Lumbar.** Belonging to the loin or *lumbus*.
- Macula.** A spot. *Macula lutea*, yellow spot.
- Major.** Greater or larger.
- Malar.** Belonging to the cheek or *mala*.
- Malleolus.** A little hammer. The two *malleoli* are the lower extremities of tibia and fibula.
- Mammary.** Pertaining to the breast or *mamma*.
- Mandible.** Derived from *mandere*, to chew. The lower jaw-bone.
- Manubrium.** A handle. The first part of the sternum.
- Masseter.** A chewer. One of the muscles of mastication or *chewing*.

- Mastitis.** Inflammation of the breast.
- Mastoid.** Shaped like a breast.
- Maxilla.** The jaw-bone. Applied to the upper jaw-bone.
- Meatus.** A passage.
- Medial.** Toward the middle line.
- Median.** Middle, as the median line of the body.
- Mediastinum.** From Latin words meaning to *stand in the midst*. The space in the middle of the thorax.
- Medulla.** Marrow.
- Medullary.** Pertaining to, or like, marrow. The *medullary canals* contain marrow.
- Meninges.** Membranes. Membranes of the brain and spinal cord.
- Mental.** From the Latin word *mens*, the mind.
- Mental.** From the Latin word *mentum*, the chin.
- Mesentery.** From two Greek words, meaning *middle* and *bowel*. (The mesentery connects the bowel with the posterior abdominal wall.)
- Metastasis.** From a Greek word meaning to *transpose*.
- Minimus.** Least or smallest. *Minimi digiti*, of the smallest digit.
- Minor.** Lesser.
- Mitral.** Resembling a miter in outline.
- Molar.** Like a mill-stone or *mola*. The *molar* teeth grind the food.
- Mucous.** Containing or resembling *mucus*.
- Mucus.** A thick clear fluid secreted by the cells of mucous membranes.
- Naris.** The nostril. (Plural, *nares*.)
- Navicular.** Boat-shaped, as the *navicular* bone.
- Necrosis.** The death of a portion of tissue, while still surrounded by living structures.
- Neural.** Pertaining to nerves. The *neural axis* is the spinal cord. The *neural canal* is the spinal canal. The *neural cavity* contains the brain and spinal cord.
- Neuron.** A single nerve cell with its branches.
- Nucha.** The nape of the neck.
- Nucleolus.** A smaller nucleus within the nucleus of a cell.
- Nucleus.** A small round body near the center of a cell. The most important part of a nucleated cell.
- Neuron.** A unit of the nerve tissues. It consists of *cell body* or *center*, *axon* and *terminal divisions*.
- Nutrient.** Nourishing.
- Nutrition.** The process of nourishing the cells of living tissues.
- Olecranon.** The large process at the upper end of the ulna. The head of the elbow.
- Occipital.** Belonging to the back of the head, or the occiput.
- Odontoid.** Resembling a tooth in shape.
- Omentum.** A fold of peritoneum connected with the stomach.
- Omos.** The shoulder. *Omo-hyoid*, belonging to shoulder and hyoid bone, as the *omo-hyoid* muscle.
- Ophthalmic.** Belonging to the eye or *ophthalmos*.
- Ora serrata.** The serrated or toothed margin of the retina.
- Orbicular.** Ring-shaped. A ligament which resembles a little circle.
- Organ.** A structure designed for a particular function or use. *Organic substances* are formed in, or by, organs.
- Os.** A bone. (Plural, *ossa*.) *Ossicle*, a little bone.
- Os.** A mouth. (Plural, *ora*.)
- Osseous.** Bony.
- Ossification.** The formation of bone.
- Osteology.** The science which treats of bones.
- Ostium venosum.** A venous door. The door or opening from an atrium to a ventricle in the heart, for the passage of venous blood.
- Outlet.** The inferior opening or strait, of the pelvis.
- Ovum.** An egg. (Plural, *ova*.)
- Palpebra.** An eyelid. *Palpebral fissure*, the fissure between the eyelids.
- Pancreas.** From words meaning *all* and *flesh*. Pancreatic fluid digests all foods.
- Papilla.** A Latin word meaning a *nipple*. A soft conic eminence.
- Parietal.** Resembling a wall (*paries*).
- Parotid.** Near the ear. The *parotid gland* is around the external ear.
- Parturition.** The act of bringing forth, or giving birth to, young.
- Patella.** A little pan. The sesamoid bone in front of the knee-joint; the "knee pan."



- Pectoral. Connected with the breast, as *pectoral muscles*.  
 Pedicle. A little foot. *Peduncle* has a similar meaning.  
 Pelvis. A basin. The cavity in the lowest part of the trunk.  
 Pericardium. Around the heart.  
 Perichondrium. Around cartilage.  
 Perimysium. The connective tissue around small bundles of muscle fibers.  
 Perineal. Pertaining to the *perineum*, that region of the body in front of the anus.  
 Periosteum. Around bone.  
 Peristalsis. From two Greek words, meaning *around* and *constriction*. The intestinal movements which propel the food.  
 Peritoneum. From two Greek words, meaning *around* and *to stretch*. The serous membrane around abdominal organs.  
 Peroneal. Relating to the fibula or *perone*. *Peroneal* nerves supply muscles on the fibula.  
 Petrous. Hard, like a rock.  
 Phagocyte. White blood-cells having the power to take micro-organisms into their substance and to digest them.  
 Phalanges. Plural of *phalanx*, a body of troops drawn up closely together. The fingers and toes.  
 Pharynx. That part of the food passage which connects the mouth and esophagus. The upper part is the *naso-pharynx*, an air passage.  
 Phlebotomy. Cutting a vein. The operation of bleeding or venesection.  
 Phrenic. Pertaining to the *phren* or diaphragm, as, the phrenic nerves.  
 Pia mater. Tender mother. The delicate membrane which bears the blood-vessels of brain and cord.  
 Pigment. Coloring matter.  
 Plantar. Belonging to the sole of the foot or *planta*.  
 Plasma. *Something moulded*. The name given to the fluid portion of the blood, from which tissues are formed. *Lymph plasma*, the fluid portion of lymph. *Muscle plasma*, the fluid portion of the contents of a muscle cell.  
 Platysma. Broad. *Platysma* muscle.  
 Pleura. A side. The name of the serous membrane which lines the thorax and covers the lungs.  
 Plexus. A network. An arrangement of vessels and nerves which appear to be woven together.  
 Pneumogastric. Belonging to the lungs and stomach.  
 Pollicis. Genitive form of *pollex*, the thumb.  
 Polymorphonuclear. Having nuclei of various shapes.  
 Poples. The ham; a space behind the knee (popliteal space).  
 Popliteal. Belonging to the *poples* or back of the knee.  
 Porta. A gate. The portal vein enters the *porta* or gate of the liver.  
 Prehension. Taking hold of.  
 Pre-molar. Applied to the teeth which stand immediately in front of the molars.  
 Process. In anatomy, a projection.  
 Pronation. Literally, bending forward. The position of the hand when the thumb is toward the body. The act of turning the hand face downward, or in the *prone* position.  
 Prostate. From Greek words meaning *to stand before*. The prostate gland is in front of the neck of the bladder.  
 Protoplasm. A simple gelatinous cell substance. *Bioplasm*.  
 Protuberance. A knob-like projection.  
 Proximal. Near the head or trunk.  
 Psychic. Pertaining to the mind.  
 Pterygoid. Wing-shaped.  
 Pubes. The anterior portion of the *os coxae*.  
 Pulmonary. Pertaining to the lung or *pulmo*.  
 Quadriceps. Four headed.  
 Rachitis. From two words meaning *spinal column* and *inflammation*. A disease in which the bones are deficient in lime salts.  
 Radius. A rod or spoke. The lateral bone of the forearm.  
 Ramus. A branch, as the *ramus* of the mandible.  
 Raphe. A seam. The union of two parts in a line, like a seam.

- Reaction. Response to a stimulus or test. The iris reacts to the stimulus of light. Urine reacts to the litmus test.  
 Reflex action. The simplest form of nerve response.  
 Receptaculum chyli. Receptacle of the chyle, the beginning of the thoracic duct.  
 Recession. Withdrawal, as the margin of the gums from the teeth.  
 Rectus. Straight, as *rectus muscles*. *Rectum* has the same meaning.  
 Recurrent. Running back. *Recurrent* arteries turn back.  
 Renal. Pertaining to the *ren* or kidney.  
 Retina. A net. The complicated nerve coat of the eye.  
 Rigor mortis. Rigidity of death. The muscular stiffness which occurs after death.  
 Rugæ. Folds. (Plural of *ruga*.) Wrinkles.  
 Saccharose. Cane sugar.  
 Sacral. Relating to the *sacrum*, or bone which protects the pelvic organs which were held sacred by the ancients.  
 Sagittal. Like an arrow—straight. The straight suture of the skull.  
 Saline. Salty.  
 Saliva. The mixed secretions of glands of the mouth and salivary glands.  
 Saphenous. Manifest or plainly seen. The large superficial vein on the medial side of the lower extremity and the longest vein in the body.  
 Sartorius. From the Latin *sartor*, tailor. The "tailor muscle."  
 Sciatic. *Ischiatic*. Pertaining to the ischium.  
 Sclerotic. Hard. The *sclerotic* is the tough fibrous coat of the eye; the *sclera*.  
 Scrobiculus cordis. Literally, pit of the heart. The little depression at the end of the sternum. The "pit of the stomach."  
 Sebaceous. Applied to the glands which produce the oil or *sebum* of the skin.  
 Secretion. A substance either nourishing or useful, formed by glandular cells.  
 Septum. A partition. (Plural, *septa*.)  
 Serous. Of the nature of *serum*, a thin watery fluid derived from the blood.  
 Serrated. Having teeth like the border of a saw. (The border of the *serratus ant.* muscle is thus.)  
 Serum. A watery fluid separated from blood.  
 Sesamoid. Resembling a grain in form. Applied to small nodules of bone sometimes found in tendons.  
 Shaft. The main portion of a long bone.  
 Sigmoid. Curved like the letter S. As the *sigmoid* (or transverse) sinus; the *sigmoid* colon.  
 Sinus. A curve, or a hollow. A bone sinus contains air. An abnormal passage opening on the surface of the body is sometimes called a sinus.  
 Soluble. That which can be dissolved or made into a *solution*.  
 Specific gravity. The weight of a substance, judged in comparison with an accepted standard. In the case of *urine*, the standard is an equal volume of distilled water—at greatest density.  
 Sphenoid. Wedge-shaped.  
 Sphincter. A muscle which closes an orifice.  
 Splanchnic. Pertaining to the viscera or internal organs.  
 Squamous. Shaped like a scale.  
 Steapsin. The pancreatic ferment which digests fats.  
 Stereognosis. The faculty of recognition of objects by handling them.  
 Sternum. Breast bone.  
 Stimulus. That which excites activity or function.  
 Striated. Striped.  
 Styloid. Pointed, like the *stylus*, which was used in ancient times for writing.  
 Sub. Under.  
 Subcutaneous. Under the skin.  
 Submucous. Under mucous membrane.  
 Subserous. Under serous membrane.  
 Sudoriferous. Bearing sweat, as sudoriferous glands. (*Sudoriparous* has the same meaning.)  
 Super. Above.  
 Superciliary. Above the eyelashes.  
 Supercilium. The eyebrow, or prominence above the eyelashes.  
 Supination. The attitude of one lying on the back. The position of the hand when the little finger is next to the body, or when lying upon the back.



- Supra.** Above.
- Sural.** Belonging to the calf or *sura*, as the *sural* muscles.
- Surgical neck.** The constriction below the head of a long bone at the narrowest portion of the shaft. The *anatomic neck* is the constriction (however slight) immediately next to the head, between it and the shaft. The *surgical neck* of the humerus and the *anatomic neck* of the femur are best examples.
- Suture.** A seam. (Latin, *sutura*.) The joints of the cranium are *sutures*.
- Symphysis.** A growing together, as the *symphysis* of the mandible.
- Synarthrosis.** An immovable joint.
- Synovia.** A fluid resembling the white of an egg, found in joint cavities and vaginal synovial membranes.
- Systole.** A Greek word meaning *contraction*. The contraction of the chambers of the heart.
- Talus.** The ankle bone upon which the tibia rests.
- Tendo Achilles.** The tendon of Achilles. The tendon of calf muscles attached to the *calcaneus* or heel bone by which Achilles was held when his mother submerged him in the river Styx, to render him invulnerable. Only the heel remained un-wetted.
- Tentorium.** A tent. The tentorium cerebelli (of the cerebellum) covers the cerebellum.
- Teres.** Round. (*Ligamentum teres*—round ligament.)
- Testes, or Testicles.** The glandular bodies which secrete semen.
- Thalamus.** A Greek word meaning a *bed*. The optic thalamus is in the base or bed of the brain.
- Thenar.** Relating to the palm or sole. *Hypothenar*—under the palm or sole—applied to the eminences on the side corresponding to the little finger or toe.
- Thorax.** The chest. The portion of the trunk which contains the heart and lungs.
- Thyroid or thyreoid.** Shield shaped.
- Torticollis.** Twisted neck, wry neck.
- Trabeculæ.** *Little beams*. (Plural of *trabecula*.) The cross bands of connective tissue which support soft structures—as in the spleen.
- Transudation.** The passing of fluid through a membrane, as of the blood serum through the walls of vessels.
- Trapezium.** A four-sided symmetrical figure. *Trapezoid*, resembling a trapezium, but not symmetrical. *Trapezius*, applied to a muscle of the back.
- Triceps.** Three headed.
- Trigone.** A space or surface having three angles or corners.
- Trochanter.** From a word signifying a *wheel*. (The muscles which are attached to the trochanters roll the femurs.)
- Trochlea.** A pulley. A trochlear surface is a grooved convexity, as the *trochlea* of the humerus.
- Trypsin.** The ferment of the pancreas which digests proteids.
- Tuber.** A swelling or bump.
- Tubercle.** A small projection like a swelling.
- Tuberosity.** A large projection on a bone.
- Tumor.** A swelling of soft tissues.
- Turbinated.** Rolled, like a scroll.
- Tympany.** The condition caused by inflation of intestines with gas, so that they sound hollow upon percussion, like a *tympanum* or drum.
- Ulna.** A cuoit; the elbow. The longer bone in the medial side of the forearm.
- Umbilicus.** From a Latin word, *umbo*, the name of the elevated or depressed point in the middle of an oval shield.
- Ungual.** Belonging to the nail or *unguis*.
- Urea.** A substance representing the chief nitrogenous product of tissue waste.
- Ureter.** The duct of the kidney, which conveys urine to the bladder.
- Urethra.** The passage through which urine is expelled from the bladder.
- Uvula.** From *uva*, a grape, or cluster of grapes (which hangs down from the branch where it grows).
- Vaginal.** Like a sheath.
- Vagus.** From *vagare*, to wander.
- Vallate.** Situated in a cavity which is surrounded by a ridge.
- Valvulæ conniventes.** Little valve-like folds. Seen on the mucous coat of the small intestine.

- Vascular.** Having many blood-vessels.
- Vaso-motor.** Literally, *vessel-mover*. Applied to the nerves which dilate blood-vessels or contract them, or *vaso-dilators* and *vaso-constrictors*.
- Velum.** Veil. *Velum palati*, the veil, or soft hanging portion of the palate or roof of the mouth.
- Vena cava.** A large hollow vein.
- Venesection.** Cutting a vein. "Bleeding" or phlebotomy.
- Ventral.** Toward the front of the body, as the *ventral cavity*.
- Ventricle.** Literally, a *little belly*. From the Latin *venter*. A cavity in the brain or in the heart.
- Vermiform.** Worm-shaped.
- Vertebra.** From a Latin word meaning *to turn*. Certain movements of the vertebræ turn the body from side to side.
- Vertex.** The crown of the head.
- Vestibule.** A cavity of the internal ear through which stimulating impulses are transmitted to auditory and vestibular nerves.
- Villus.** A hair (pl. *villi*). The villi of the intestine are hair-like in shape and belong to the mucous coat.
- Viscus.** An internal organ of the head or trunk. (Plural, *viscera*.)
- Vitreous.** Glassy. The *vitreous humor* resembles glass in appearance. The *vitreous layers* of the skull are brittle like glass.
- Volar.** Belonging to the palm or *vola*.
- Xyphoid.** Sword-shaped. The third piece of the sternum is the *xyphoid* or ensiform appendix.
- Zygoma.** A yoke. The arch of bone at the side of the face formed by zygomatic processes of frontal and maxillary bones.



## INDEX

- Abdomen, abdominal organs, 365, 367
  - regions of, 366
- Abdominal brain (Solar Plexus), 318
- Abdominal wall, 94
- Absorption, 166, 169
- Accommodation, 338
- Acetabulum, 48
- Acromegaly, 267
- Adipose tissue, 4, 5
- Adrenal bodies, 264
- Air or atmosphere, 231
  - air cells, 236
  - tidal volume, 239
- Alimentary canal, 130
- Ameboid movements, 173
- Anatomic position and use of terms, 1
- Animal heat, 274
- Antrum of Highmore, 25
- Aorta, 187, 189
- Apnea, 242
- Aponeurosis, description of, 84
  - vertebral, 86
- Apophysis, 15
- Appendix ceci (vermiformis), 144
- Aqueduct of Sylvius (of cerebrum), 303
- Aqueous humor, 338
- Arachnoid of brain, 305
  - of cord, 281
- Arbor vitæ, 302 (illus. 301)
- Arches of foot, 73
  - of hand, 192, 193
  - of vertebræ, 39
  - palatine, 133
  - superciliary, 21
  - supraorbital, 20
  - zygomatic, 33
- Areolar tissue, 5
- Arm, bone of, 56
  - muscles of, 104
- Arterioles and arteries, 174, 175
- Arterio-sclerosis, 216
- Articular surface, 13
- Articulations or joints, 17
  - of cranium, 24
  - of face, 28
  - of lower extremity, 70
  - of pelvis, 49, 50
  - of spinal column, 42
  - of thorax, 47
  - of upper extremity, 60
- Ascites, 7
- Asphyxia, 241
- Assimilation, 166
- Associated movements, 344
- Atlas, 40
- Auditory tube (Eustachian), 330
- Auricle of heart, 176
- Axillary space, 368
- Axis (artery), 191
  - (bone), 40
- Axon, 278
- Bifurcation of aorta, 198
- Bile, 150
- Bioplasm, 4
- Bladder, urinary, 246
- Blood, 171
  - circulatory organs of, 174
  - coagulation of, 217
  - pressure, 216
- Bone, articular, 13
  - markings, 13
  - nutrition, 15
  - repair of, 77
  - tissue, 11
- Bones, completion of, 76
  - in infancy, 75
  - shapes of, 14
  - structure of, 11
- Brain, 299
  - fissures of, 300
- Brain hemispheres, 300
  - lobes of, 300





The **Margaret Eaton School Digital Collection** is a not-for-profit resource created in 2014-2015 to assist scholars, researchers, educators, and students to discover the Margaret Eaton School archives housed in the Peter Turkstra Library at Redeemer University College. Copyright of the digital images is the property of Redeemer University College, Ancaster, Canada and the images may not be copied or emailed to multiple sites without the copyright holder's express written permission. However, users may print, download, or email digital images for individual non-commercial use. To learn more about this project or to search the digital collection, go to <http://libguides.redeemer.ca/mes>.